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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,686	03/11/2004	Rocco DiFoggio	584-30872-US	6263

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PAUL S MADAN
MADAN, MOSSMAN & SRIRAM, PC
2603 AUGUSTA, SUITE 700
HOUSTON, TX 77057-1130

EXAMINER	
SUNG, CHRISTINE	
ART UNIT	**PAPER NUMBER**
2884	

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/798,686	DIFOGGIO, ROCCO	
	Examiner	Art Unit	
	Christine Sung	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2004 and 21 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-16,18-26 and 28-30* is/are rejected.

7)☒ Claim(s) *7,17 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1204,1004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-6, 8, 11, 13-16, 18, 21, 23-26 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Mullins et al. (US Patent 6,476,384 B1).

Regarding claim 1, Mullins discloses a method for quantifying a weight percent or mass fraction (abstract) methane of a fluid down hole comprising:

Obtaining the fluid down hole (Claim 20) ;

Measuring a first optical density for the fluid at a first wavelength region associated with a methane peak (column 5, lines 50-57);

Measuring a second optical density for the fluid at a second wavelength region associated with the methane peak (column 5, lines 57-65); and

Determining weight percent or mass fraction of methane for the fluid sample from the first and second measured optical densities (Column 7, lines 11-15 and Claim 7).

Regarding claim 3, Mullins discloses correlating weight percent methane with optical absorbance at the first and second wavelengths (claim 14).

Regarding claims 4-5, Mullins discloses correlating pressure and temperature (Column 7, lines 20-23).

Regarding claim 6, Mullins discloses determining the gas oil ratio on the weight percent or mass fraction of methane (Claim 7).

Regarding claim 8 Mullins discloses correlating based on synthetic mixtures of methane and dead crude oils (claim 4 and column 7, lines 28-43).

Regarding claim 11, Mullins discloses an apparatus for quantifying the weight percent of methane in a well bore environment, comprising:

A tool for obtaining a fluid down hole (Claim 20);

A spectrometer for measuring a first optical density for the fluid at the first wavelength region associated with a methane peak and measuring a second optical density for the fluid at a second wavelength region associated with the methane peak (column 5m lines 50-65); and

A processor function for determining weight percent methane for the fluid sample from the first and second measured optical densities (Column 7, lines 11-15 and Claim 7).

Regarding claim 13, Mullins discloses a processor function for correlating weight percent methane with optical absorbance at the first and second wavelengths (claim 14).

Regarding claims 14-15, Mullins discloses correlating pressure and temperature (Column 7, lines 20-23).

Regarding claim 16, Mullins discloses a processor function for determining a gas oil ratio for the sample based on the weight percent methane (Claim 7).

Regarding claim 18 Mullins discloses correlating based on synthetic mixtures of methane and dead crude oils (claim 4 and column 7, lines 28-43).

Regarding claim 21, Mullins discloses a computer readable medium in a computer containing executable instructions that when executed by a computer, perform a method for quantifying the weight percent of methane in a well bore environment comprising:

Obtaining the fluid down hole (Claim 20) ;

Measuring a first optical density for the fluid at a first wavelength region associated with a methane peak (column 5, lines 50-57);

Measuring a second optical density for the fluid at a second wavelength region associated with the methane peak (column 5, lines 57-65); and

Determining weight percent or mass fraction of methane for the fluid sample from the first and second measured optical densities (Column 7, lines 11-15 and Claim7).

Regarding claim 23, Mullins discloses correlating weight percent methane with optical absorbance at the first and second wavelengths (claim 14).

Regarding claim 24-25, Mullins disclose correlating pressure and temperature (column 7, lines 20-23).

Regarding claim 26, Mullins discloses determining the gas oil ratio on the weight percent or mass fraction of methane (Claim 7).

Regarding claim 28 Mullins discloses correlating based on synthetic mixtures of methane and dead crude oils (claim 4 and column 7, lines 28-43).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2, 9-10, 12, 19, 20, 22 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mullins (US Patent 6,476,384 B1).

Regarding claim 2, Mullins discloses that the first wavelength region has a center wavelength of 1671 nanometers (claim 17); and the second wavelength has a center wavelength of 1675 nanometers (claim 17). Mullins does not explicitly state the exact wavelength ranges, but teaches the two wavelengths in order to determine the amount of methane (column 3, lines 11-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed wavelengths, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 9, Mullins discloses filtering an optical density measurement with a 15 nm or 35 nm full width half maximum filter (column 5, lines 50-65). Further, Mullins teaches selecting the filter based on the desired peak. One of ordinary skill in the art would be motivated to select an 11 nm full width half maximum filter, a narrow band filter, as claimed, in order to reduce processing required and increasing the number of available channels for other wavelength measurements.

Regarding claim 10, Mullins discloses that the first wavelength region has a center wavelength of 1671 nanometers (claim 17); and the second wavelength has a center wavelength of 1675 nanometers (claim 17). Mullins does not explicitly state the exact wavelength ranges, but teaches the two wavelengths in order to determine the amount of methane (column 3, lines 11-

15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed wavelengths, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Mullins further discloses correlating weight percent methane (claim 14), pressure and temperature with optical absorbance at the first and second wavelength regions (column 7, lines 20-23); and determining a gas oil ratio based on the weight percent methane (claim 7).

Regarding claim 12, Mullins discloses that the first wavelength region has a center wavelength of 1671 nanometers (claim 17); and the second wavelength has a center wavelength of 1675 nanometers (claim 17). Mullins does not explicitly state the exact wavelength ranges, but teaches the two wavelengths in order to determine the amount of methane (column 3, lines 11-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed wavelengths, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 19, Mullins discloses filtering an optical density measurement with a 15 nm or 35 nm full width half maximum filter (column 5, lines 50-65). Further, Mullins teaches selecting the filter based on the desired peak. One of ordinary skill in the art would be motivated to select an 11 nm full width half maximum filter, a narrow band filter, as claimed, in order to reduce processing required and increasing the number of available channels for other wavelength measurements.

Regarding claim 20, Mullins discloses that the first wavelength region has a center wavelength of 1671 nanometers (claim 17); and the second wavelength has a center wavelength of 1675 nanometers (claim 17). Mullins does not explicitly state the exact wavelength ranges, but teaches the two wavelengths in order to determine the amount of methane (column 3, lines 11-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed wavelengths, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Mullins further discloses correlating weight percent methane (claim 14), pressure and temperature with optical absorbance at the first and second wavelength regions (column 7, lines 20-23); and determining a gas oil ratio based on the weight percent methane (claim 7). 22. The medium of claim 21, wherein the first wavelength region has a center wavelength of 1670 nanometers; and the second wavelength has a center wavelength of 1682 nanometers.

Regarding claim 22, Mullins discloses that the first wavelength region has a center wavelength of 1671 nanometers (claim 17); and the second wavelength has a center wavelength of 1675 nanometers (claim 17). Mullins does not explicitly state the exact wavelength ranges, but teaches the two wavelengths in order to determine the amount of methane (column 3, lines 11-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed wavelengths, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 29, Mullins discloses filtering an optical density measurement with a 15 nm or 35 nm full width half maximum filter (column 5, lines 50-65). Further, Mullins teaches selecting the filter based on the desired peak. One of ordinary skill in the art would be motivated to select an 11 nm full width half maximum filter, a narrow band filter, as claimed, in order to reduce processing required and increasing the number of available channels for other wavelength measurements.

Regarding claim 30, Mullins discloses that the first wavelength region has a center wavelength of 1671 nanometers (claim 17); and the second wavelength has a center wavelength of 1675 nanometers (claim 17). Mullins does not explicitly state the exact wavelength ranges, but teaches the two wavelengths in order to determine the amount of methane (column 3, lines 11-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed wavelengths, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Mullins further discloses correlating weight percent methane (claim 14), pressure and temperature with optical absorbance at the first and second wavelength regions (column 7, lines 20-23); and determining a gas oil ratio based on the weight percent methane (claim 7). 22. The medium of claim 21, wherein the first wavelength region has a center wavelength of 1670 nanometers; and the second wavelength has a center wavelength of 1682 nanometers.

Allowable Subject Matter

5. Claims 7, 17, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 7, 17, and 27, none of the prior art of record specifies or makes obvious a method or apparatus for quantifying weight percent methane of a fluid downhole, namely where a sample is cleaned up based upon a change in weight percent in methane. Conventional methane detection devices in borehole applications often complete detection and analysis of the sample before any cleanup is instigated, however in the instant application, cleanup is based on changes in weight percent methane.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. US Patent 6,343,507- this reference discloses determining optical density from a downhole tool.

9. US Pre Grant Publication 2004/0233446 A1- this reference discloses a optical fluid analysis signal detector using color wavelengths.

10. US 20050018192 A1- this references is related to the instant application.

11. US 20040007665 A1- this reference is related to the instant application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 571-272-2448. The examiner can normally be reached on Monday- Friday 7-3 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christine Sung
Examiner
Art Unit 2884

OTILIA GABOR
PRIMARY EXAMINER

CS